ITEM:

DIESEL GENERATOR SET C175-20 / 4000 / kVA 11kV 50Hz

TITLE:

GENERATOR SET DATA SHEET

Rev.	Date	Description	Prepared	Checked	Approved
00	03/10/2025	Issued for Information	VIDM	F. Scudellari	E. Landini

GENERATOR SET DATA SHEET

Cat® C175-20
Diesel Generator Sets

Image shown may not reflect actual configuration.

Bore – mm (in)	175 (6.89)
Stroke – mm (in)	220 (8.66)
Displacement – L (in^3)	105.8 (6456)
Compression Ratio	15.3:1
Aspiration	TA
Fuel System	Common Rail
Governor Type	ADEM™ A4

Mission Critical 50 Hz kVA (ekW)	Emissions Performance
4000 (3200)	Optimized for Low Fuel Consumption
4000 (3200)	Optimized for Low Emissions

Features

Cat® Diesel Engine
- Designed and optimized for low emissions or low fuel consumption
- Reliable performance proven in thousands of applications worldwide

Generator Set Package
- Accepts 100% block load in one step
- Meets NFPA 110 loading requirements
- Conforms to ISO 8528-5 G3 load acceptance requirements
- Reliability verified through torsional vibration, fuel consumption, oil consumption, transient performance, and endurance testing

Alternators
- Superior motor starting capability minimizes need for oversizing generator
- Designed to match performance and output characteristics of Cat diesel engines

EMCP 4 Control Panels
- User-friendly interface and navigation
- Scalable system to meet a wide range of installation requirements
- Expansion modules and site specific programming for specific customer requirements

Warranty
- 24 months/1000-hour warranty for mission critical ratings
- Extended service protection is available to provide extended coverage options

Worldwide Product Support
- Cat dealers have over 1,800 dealer branch stores operating in 200 countries
- Your local Cat dealer provides extensive post-sale support, including maintenance and repair agreements

Financing
- Caterpillar offers an array of financial products to help you succeed through financial service excellence
- Options include loans, finance lease, operating lease, working capital, and revolving line of credit
- Contact your local Cat dealer for availability in your region

Standard and Optional Equipment

Engine

Air Cleaner
- ■ Single element

Muffler
- ❑ Industrial grade (15 dB)
- ❑ Residential grade (25 dB)
- ❑ Critical grade (35 dB)

Starting
- ❑ Standard batteries
- ❑ Oversized batteries
- ❑ Standard electric starter(s)
- ■ Heavy duty electric starter(s)
- ❑ Dual electric starter(s)
- ❑ Air starter(s)
- ■ Jacket water heater

Alternator

Output voltage
- ❑ 3300V
- ❑ 6300V
- ❑ 6600V
- ❑ 6900V
- ❑ 10000V
- ❑ 10500V
- ■ 11000V

Temperature Rise (over 40°C ambient)
- ❑ 150 °C
- ❑ 125 °C/130 °C
- ❑ 105 °C
- ❑ 80 °C

Winding type
- ❑ Form wound

Excitation
- ■ Permanent magnet (PM)

Attachments
- ■ Anti-condensation heater
- ■ Stator and bearing temperature monitoring and protection

Control System

Controller
- ❑ EMCP 4.2B
- ■ EMCP 4.3
- ❑ EMCP 4.4

Attachments
- ❑ Local annunciator module
- ❑ Remote annunciator module
- ❑ Expansion I/O module
- ❑ Remote monitoring software

Charging
- ❑ Battery charger – 20A
- ❑ Battery charger – 35A
- ❑ Battery charger – 50A

Vibration Isolators
- ❑ Rubber
- ❑ Spring
- ■ Seismic rated

Cat Connect

Connectivity
- ■ Ethernet
- ❑ Cellular

Extended Service Options

Terms
- ❑ 3 year
- ❑ 5 year
- ❑ 10 year

Coverage
- ❑ Silver
- ❑ Gold
- ❑ Platinum
- ❑ Platinum Plus

Ancillary Equipment
- ❑ Automatic transfer switch (ATS)
- ❑ Paralleling switchgear
- ❑ Paralleling controls

Certifications
- ❑ EU & GB Declaration of Conformity
- ❑ IBC seismic certification

For detailed alternator technical data, refer to specific data sheet included on page 6 of this document

Note: Some options may not be available on all models. Certifications may not be available with all model configurations. Consult factory for availability.

Package Performance

Performance	Mission Critical	
Frequency	50 Hz	
Gen set power rating with fan	3200 ekW	
Gen set power rating with fan @ 0.8 power factor	4000 kVA	
Emissions	Low Fuel	
Performance number	EM0375-03	
Fuel Consumption		
100% load with fan – L/hr (gal/hr)	762.4	(201.4)
75% load with fan – L/hr (gal/hr)	567.7	(150.0)
50% load with fan – L/hr (gal/hr)	396.6	(104.8)
25% load with fan – L/hr (gal/hr)	221.6	(58.5)
Cooling System		
Engine coolant capacity – L (gal)	440.0	(116.2)
Inlet Air		
Combustion air inlet flow rate – m^3/min (cfm)	267.0	(9429.1)
Exhaust System		
Exhaust stack gas temperature – °C (°F)	421.8	(791.2)
Exhaust gas flow rate – m^3/min (cfm)	652.2	(23028.2)
Exhaust system backpressure (maximum allowable) – kPa (in. water)	6.7	(27.0)
Heat Rejection		
Heat rejection to jacket water – kW (Btu/min)	1613	(91754)
Heat rejection to exhaust (total) – kW (Btu/min)	2762	(157080)
Heat rejection to aftercooler – kW (Btu/min)	373	(21186)
Heat rejection to atmosphere from engine – kW (Btu/min)	184	(10446)
Heat rejection from alternator – kW (Btu/min)	140	(7969)
Emissions* (Nominal)		
NOx mg/Nm^3 (g/hp-h)	4168.6	(7.87)
CO mg/Nm^3 (g/hp-h)	61.8	(0.13)
HC mg/Nm^3 (g/hp-h)	21.0	(0.05)
PM mg/Nm^3 (g/hp-h)	6.2	(0.01)
Emissions* (Potential Site Variation)		
NOx mg/Nm^3 (g/hp-h)	5002.3	(9.45)
CO mg/Nm^3 (g/hp-h)	111.2	(0.23)
HC mg/Nm^3 (g/hp-h)	27.9	(0.07)
PM mg/Nm^3 (g/hp-h)	8.7	(0.02)

**mg/Nm^3 levels are corrected to 5% O_2. Contact your local Cat dealer for further information.*

ALTERNATOR DATA SHEET

TECHNICAL DATASHEET

THREE-PHASE SYNCHRONOUS GENERATOR

Our Reference	21849	Date	22/02/2024
Customer	Caterpillar Inc.	Rev.	=

GENERATORE TIPO - GENERATOR TYPE		MJH 710 LB4
CLASSE DI SOVRATEMPERATURA - TEMPERATURE RISE CLASS		Stand-by (130 °C)
CLASSE DI ISOLAMENTO – INSULATION CLASS		H
FORMA COSTRUTTIVA – MOUNTING		B20
TEMPERATURA AMBIENTE – AMBIENT TEMPERATURE	°C	40
ALTITUDINE MASSIMA - MAX. ALTITUDE	m	< 500
GRADO DI PROTEZIONE - PROTECTION DEGREE	IP	23
SISTEMA DI RAFFREDDAMENTO - COOLING SYSTEM	IC	01
FATTORE DI POTENZA - POWER FACTOR		0,80
NUMERO DI POLI - NUMBER OF POLES		4
VELOCITA' NOMINALE - RATED SPEED	rpm	1500
SOVRAVELOCITA' - OVERSPEED	rpm	1800
NUMERO DI TERMINALI - NUMBER OF TERMINALS		6
PASSO DI AVVOLGIMENTO - WINDING PITCH / TIPOLOGIA - WINDING TYPE		2/3 - Form Wound
RESISTENZA STATORICA @ 20°C - STATOR RESISTANCE @ 20°C	mΩ	115
PESO - WEIGHT	kg	Approx. 14500
MOMENTO D'INERZIA- INERTIA	kgm^2	Approx. 244
TEMPERATURA ACQUA RAFFREDDAMENTO – COOLING WATER TEMPERATURE	°C	-
PORTATA D'ACQUA – WATER FLOW RATE	m^3/h	-
CADUTA DI PRESSIONE – PRESSURE DROP	kPa	-
AUMENTO TEMPERATURA ACQUA – WATER TEMPERATURE INCREASE	°C	-
TA DI CENTRO STELLA - NEUTRAL POINT CURRENT TRANSFORMER		-
CUSCINETTI - BEARINGS		ANTIFRICTION

FREQUENZA - FREQUENCY	Hz	50
TENSIONE - VOLTAGE	V	11000
CORRENTE NOMINALE - RATED CURRENT	A	210
POTENZA - RATING	kVA	4000

PERCENTUALE DI CARICO - PARTIAL LOAD DATA		%	100	75	50	25
RENDIMENTO - EFFICIENCY	P.F.= 1	%	97,5	97,3	96,7	94,5
	P.F.= 0,80	%	96,7	96,5	95,8	93,1

Rapporto di corto circuito - Short circuit ratio		SCR	0,55
Reattanza - Reactance (%)	sincrona diretta - synchronous direct axis	Xd uns	187
	sincrona in quadratura - synchr. quadrature axis	Xq uns	105
	transitoria diretta - transient direct axis	X'd sat	20,1
	transitoria in quadratura - transient quadrature axis	X'q uns	105
	subtransitoria diretta - subtransient direct axis	X"d sat	9,5
	subtransitoria in quad. - subtransient quadr. axis	X"q sat	8,7
	di sequenza negativa - negative sequence	X2 sat	9,1
	di sequenza zero - zero sequence	Xo sat	1,2
Costanti di tempo - Time constants (s)	a vuoto - open circuit	T'do	5,588
	transitoria - transient	T'd	0,599
	subtransitoria - subtransient	T"d	0,027
	unidirezionale - armature	Ta = Tdc	0,052
Coppia di corto circuito bifase - Phase to Phase short circuit torque		kNm	401
Coppia di corto circuito trifase - Three phase short circuit torque		kNm	267

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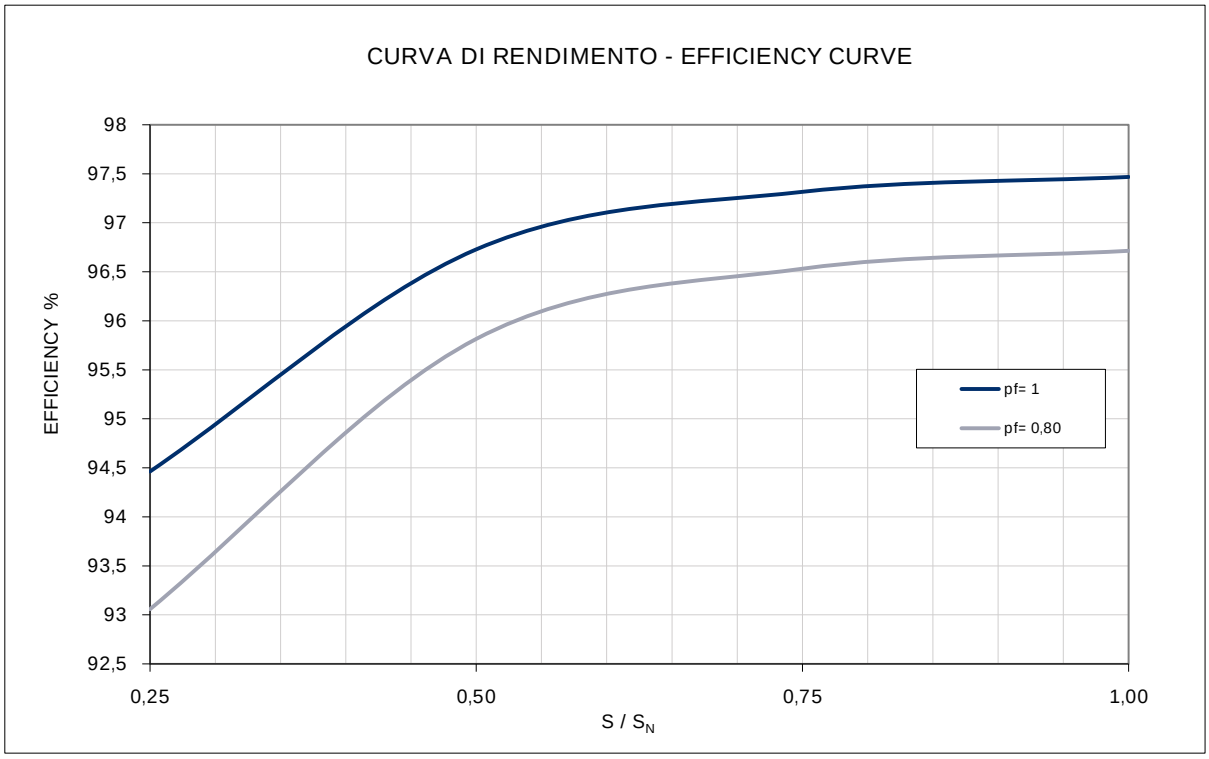

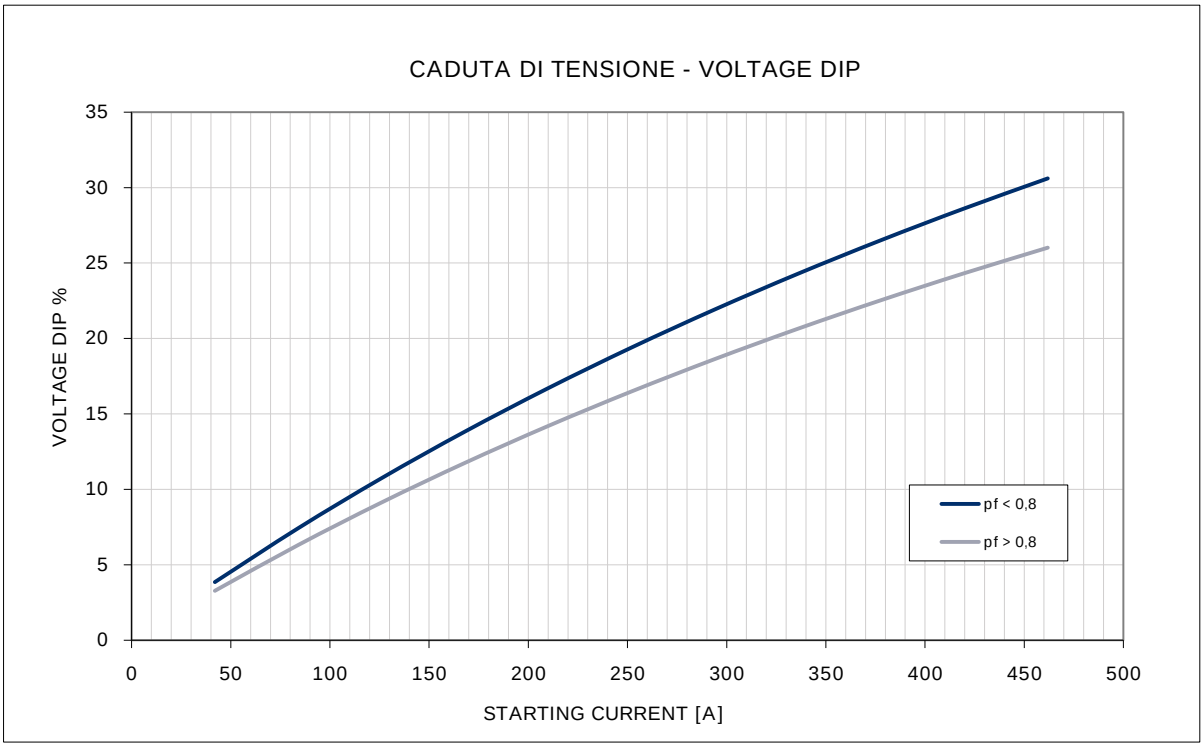

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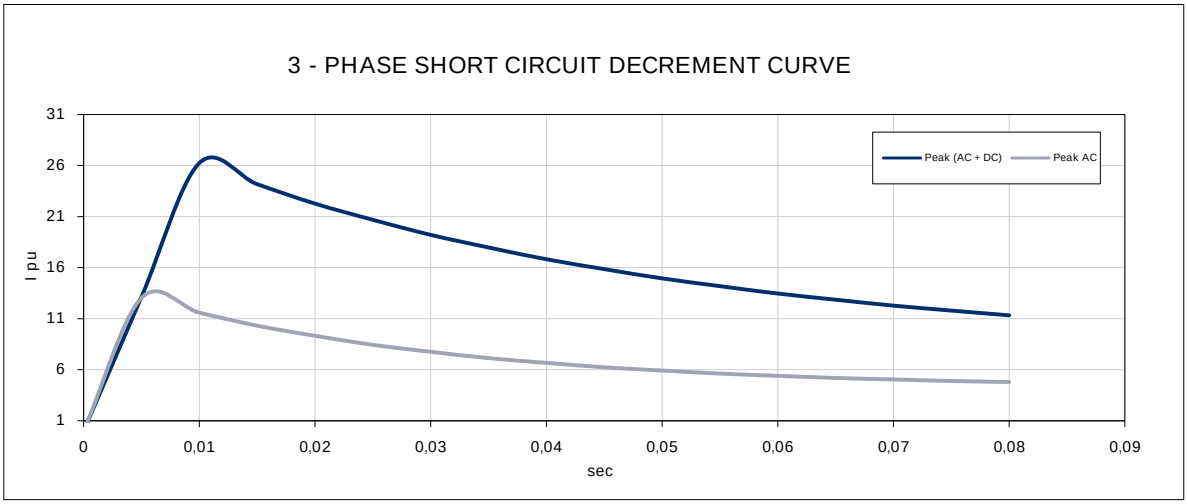

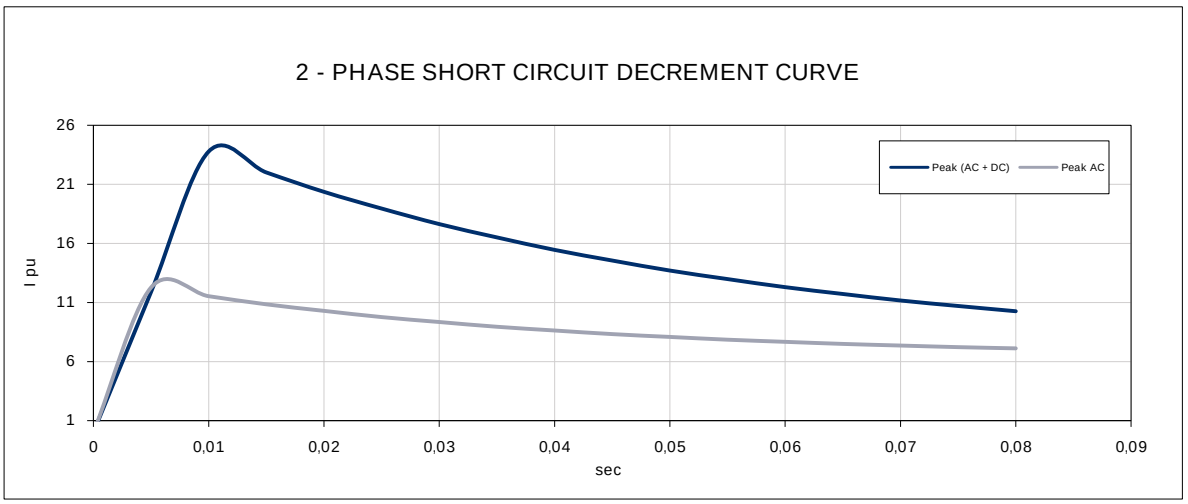

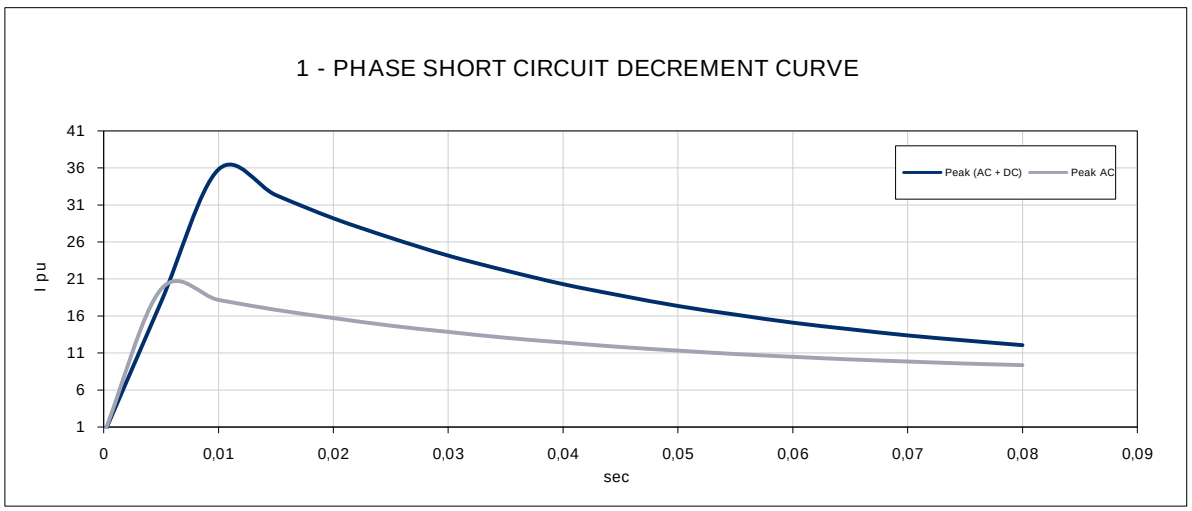

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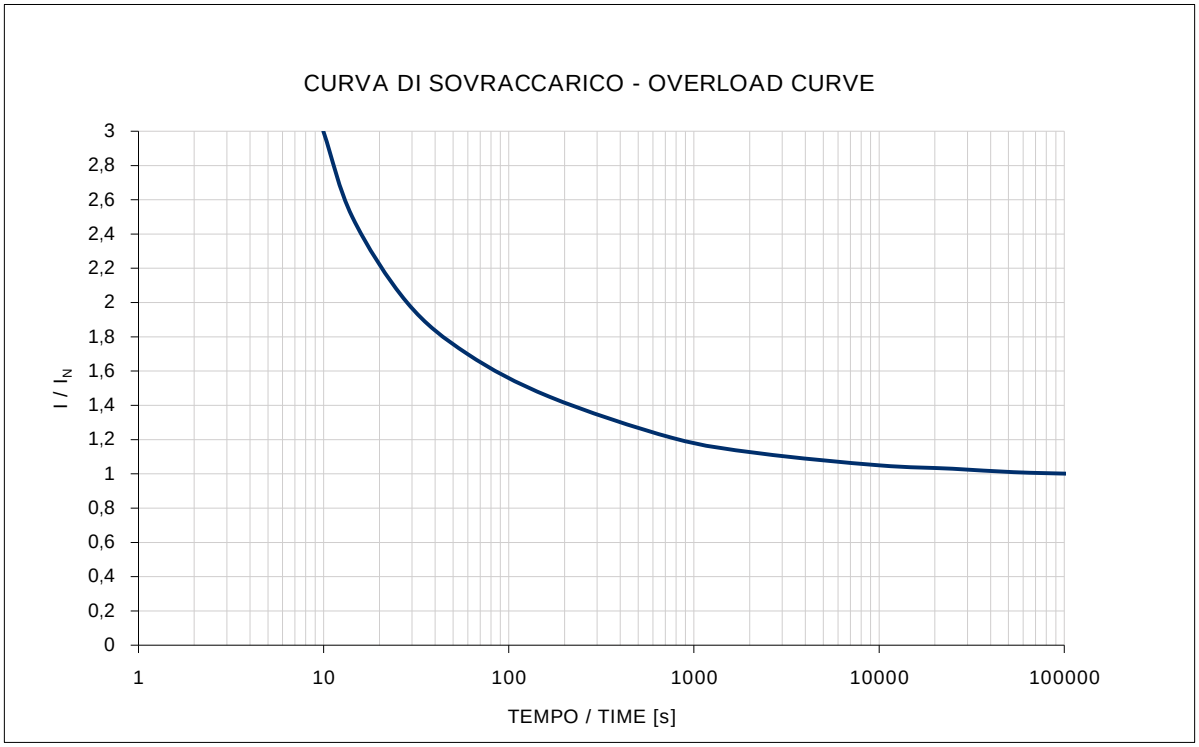

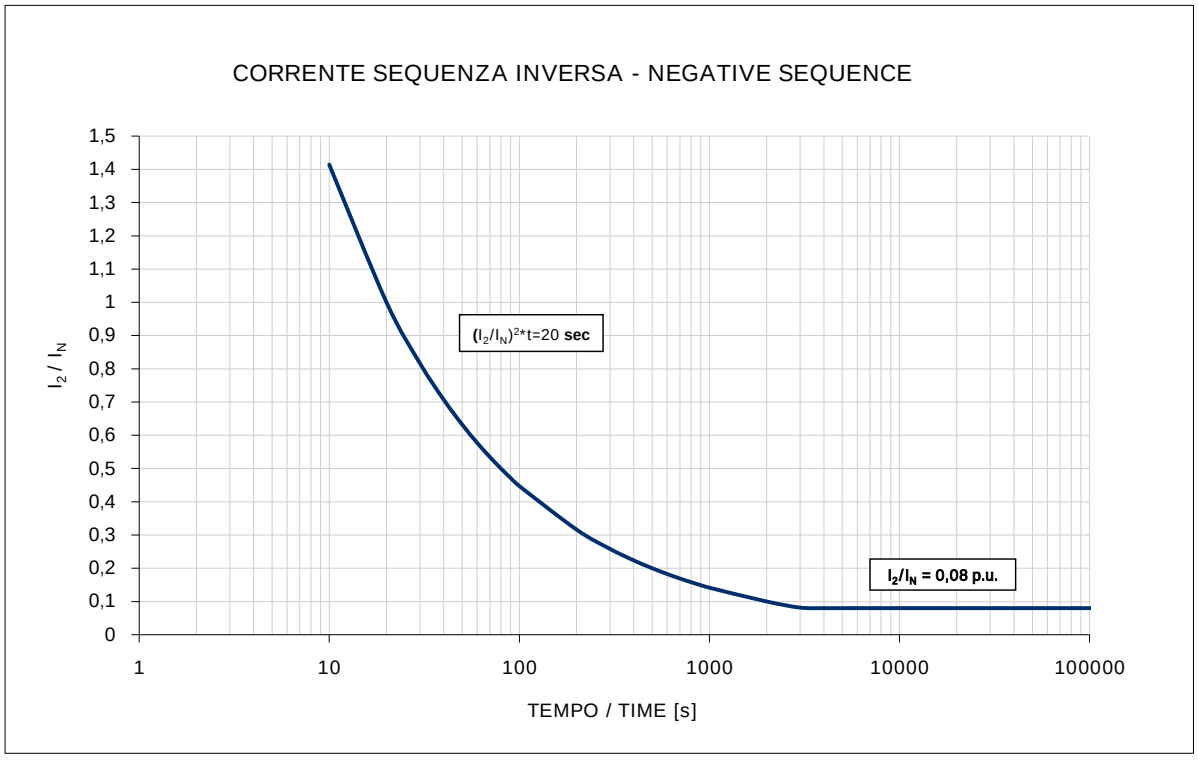

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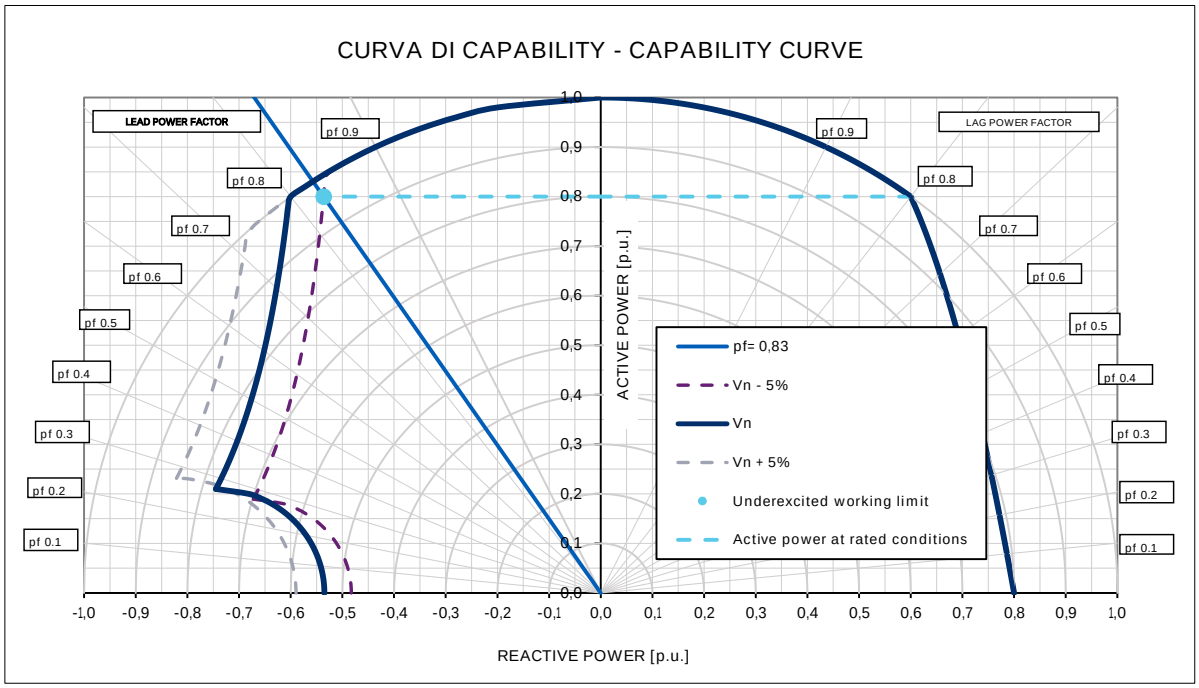

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